or $\boxed{\cos^2 x=\frac{1+\cos 2x}{2}}$

$$\boxed{E_m=\frac{1}{4}LI_m^2\left[1+\cos(2\omega_0 t+2\varphi)\right]}$$

b- $E_{em}=\frac{1}{2}C.u_C^2+\frac{1}{2}Li^2$

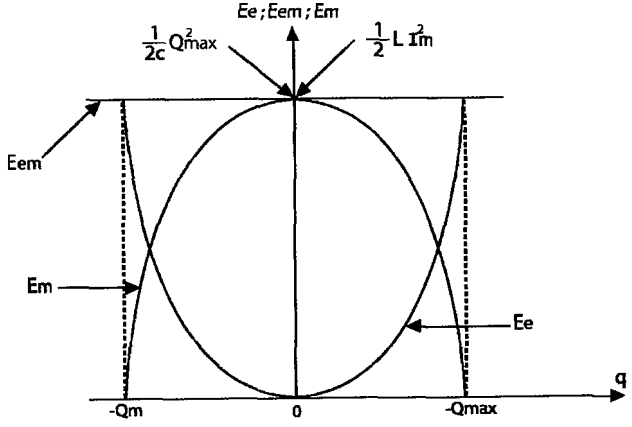
$$\frac{dE_{em}}{dt}=\frac{1}{2}C(2u_C\frac{du_C}{dt})+\frac{1}{2}L(2i\frac{di}{dt})$$

$$=i(\underbrace{u_C+L\frac{di}{dt}}_{0\text{ (d'après l'éq.diff)}})$$

$\frac{dE_{em}}{dt}=0\Rightarrow E_{em}=cte\Rightarrow$ L'énergie se conserve.

$E_{em}=\frac{1}{2}C.U_{c_{max}}^2=5.10^{-4}J$

3) a- $E_e=\frac{1}{2}C.u_C^2=\frac{1}{2C}q^2; E_m=E_{em}-E_e=E_{em}-\frac{1}{2C}q^2$



$E_e=\frac{1}{2C}q^2$ de la forme $a.x^2$

$E_m=E_{em}-E_e=E_{em}-\frac{1}{2C}q^2$ de